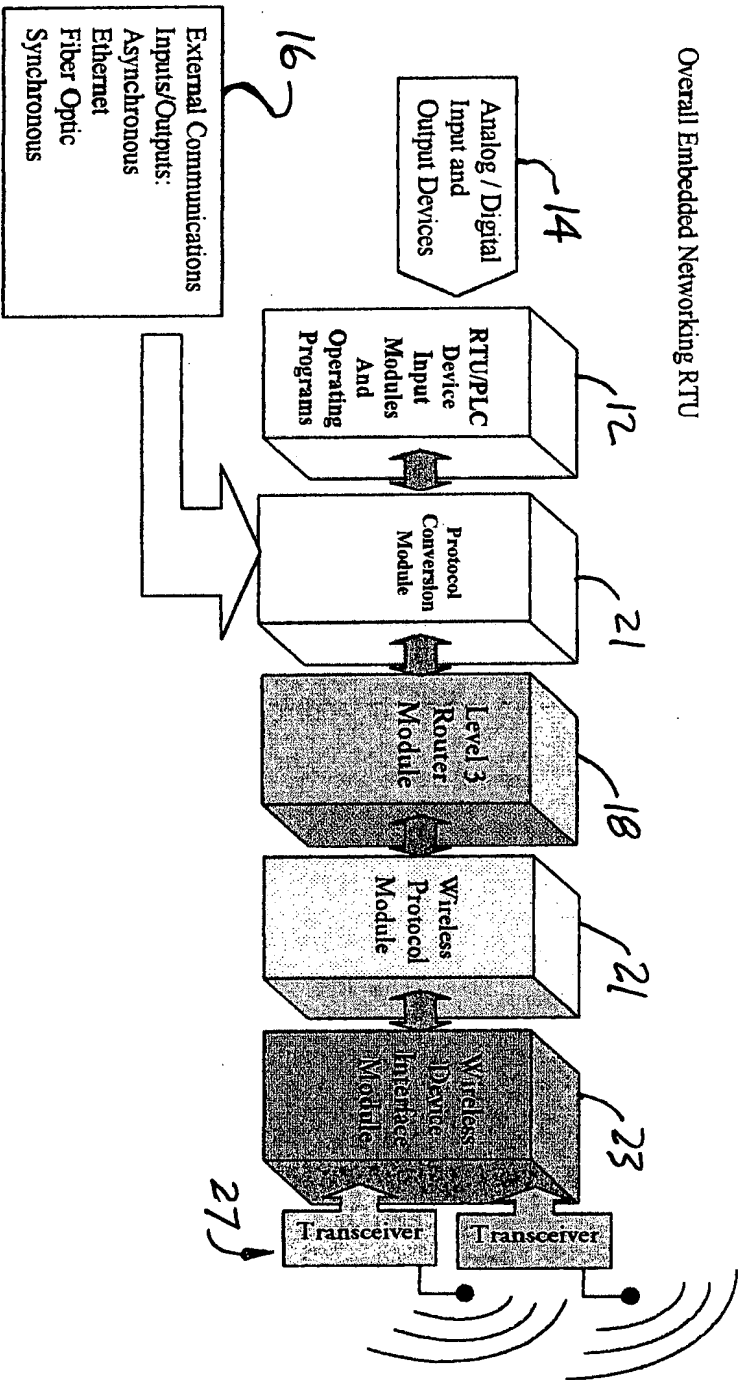


# Overall Embedded Networking RTU



## Basic System Operation:

Module	Function
RTU/PLC Input device	Converts Physical and virtual parameters datagrams that are bi-directional transferred to the protocol conversion module
Protocol Conversion module	Converts the instrumentation time discrete information into an IP base protocol that can be routed and serviced by the embedded IP router
Level 3 Internet protocol Router	Internally routes the instrumentation data packets to the appropriate wireless cell also maintains internal network map of all connecting links
Wireless protocol Module	This module manages five functions required to create reliable links to multiple users within the radio range of each attached transceiver: 1. Establishes one or more multi-access wireless cells

002450-12546560

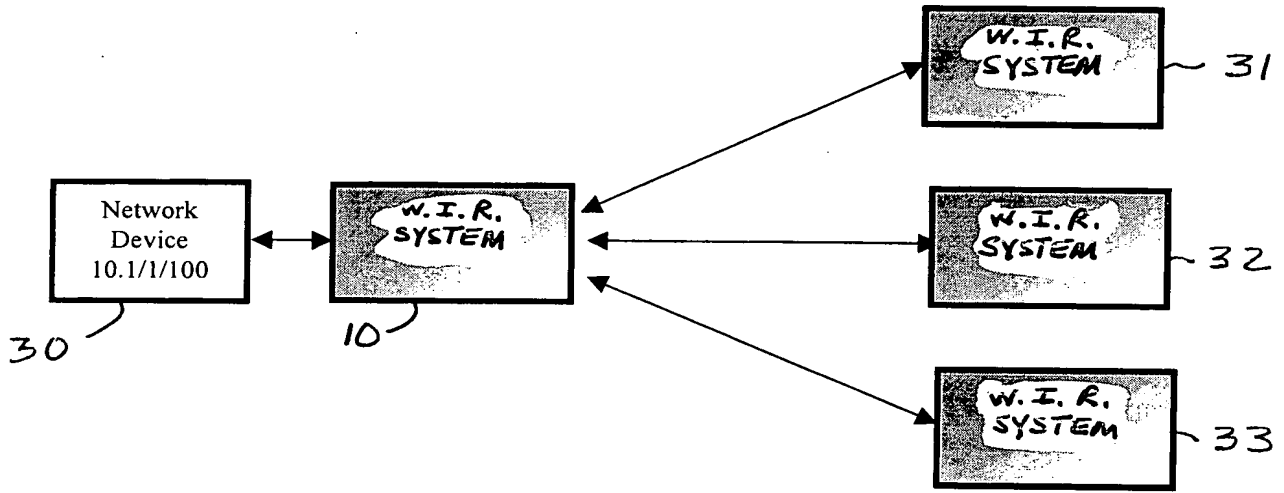


FIG. 2



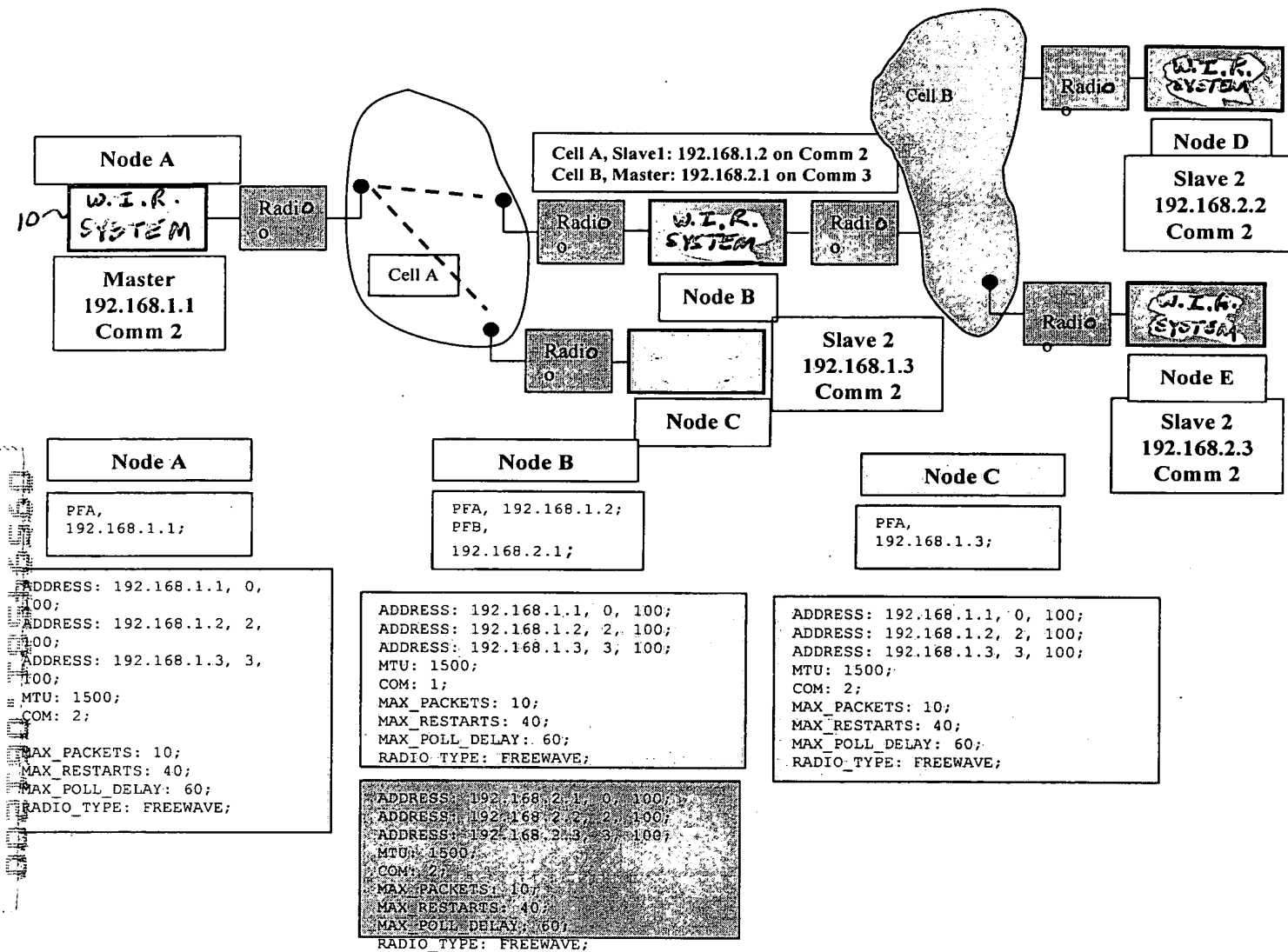


FIG. 4

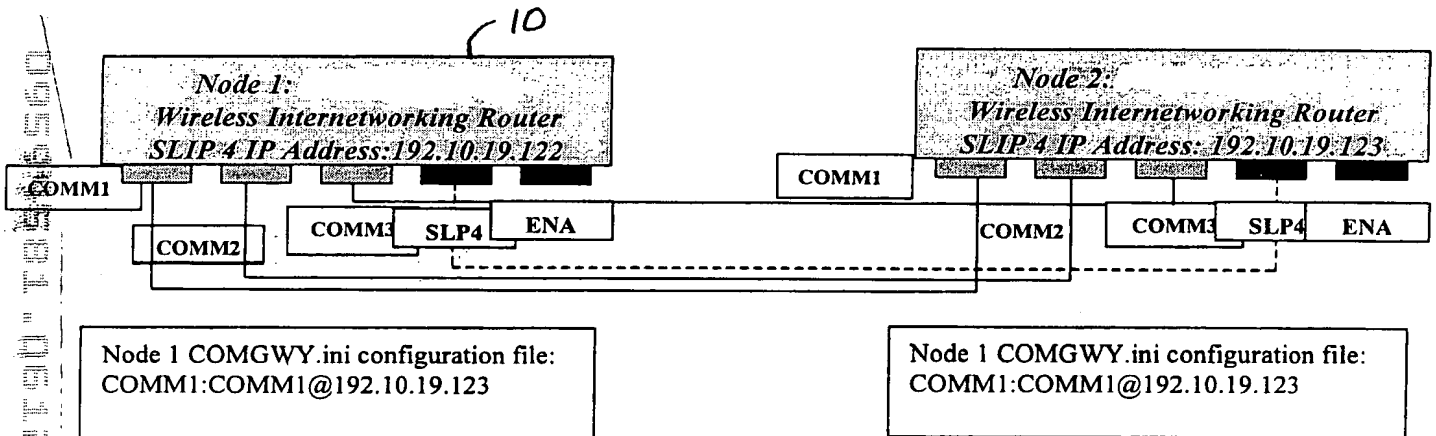


FIG. 5

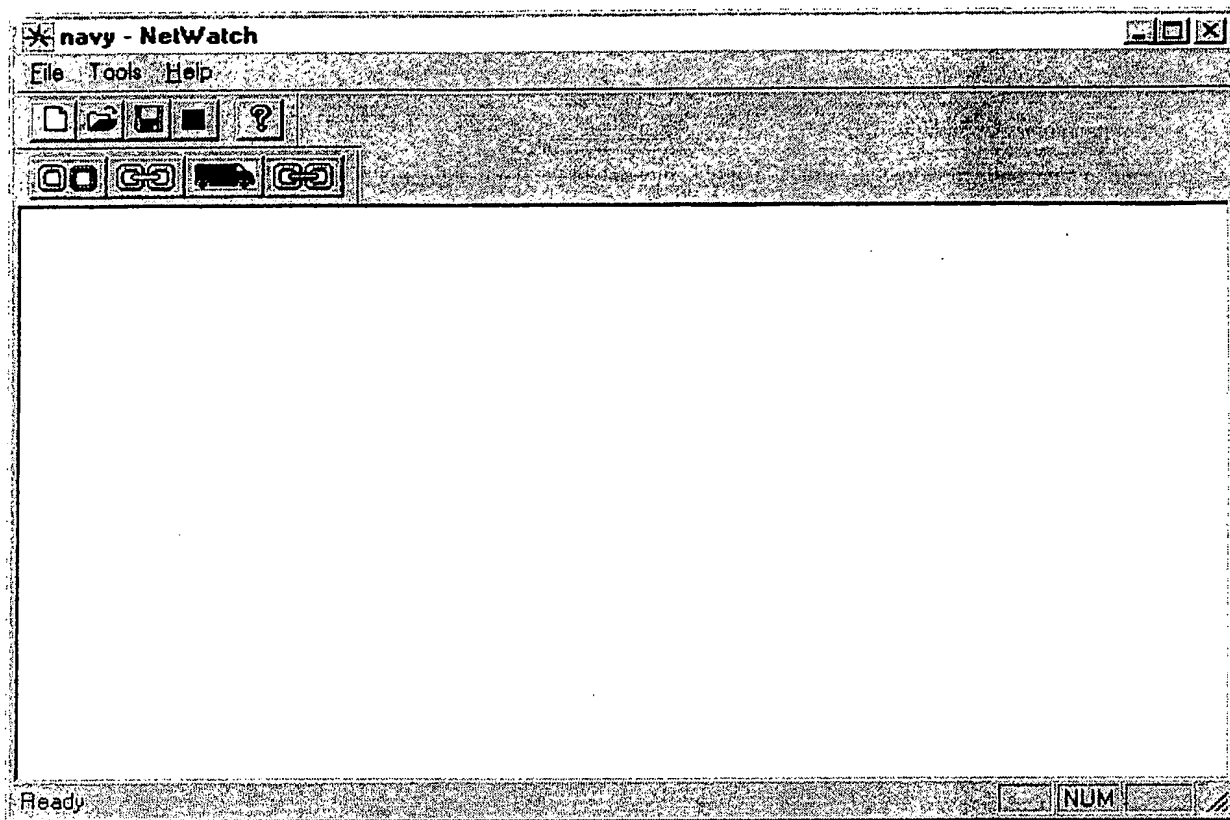


FIG. 6

002190" 1254550

**Define New Node**

Name:

Description:

FIG. 7.

**New Link** ✕

Link Protocol: ☒ SLIP ☐ Pathfinder

Routing: ☒ Internal ☐ External

IP Address:

FIG. 8

002750" TEST 0560

**Probe Control**

IP Address: 192.99.2.4    Name: Station 99    Description: Multi System Console

**Round Trip Times (ms)**

Low Deviation	Mean	High Deviation
33	485	30
Minimum	Current	Maximum
380	440	10000

**Status**

Sent	Received	Time Out
5833	4832	727

**Parameters**

Sample Significance	Maximum Wait Time	Probe Interval
1/10	10000	1000

Control Buttons: Start, Pause, Halt, Add, Delete, Find

Indicators: Circular indicator (100), Speaker icon

Select for Detailed Display			
Success	IP Address	Name	Description
100%	192.7.2.2	Station7	Firehall 1
100%	192.1.2.1	Station1	CNX1
100%	192.2.2.1	Station 2	CNX2
100%	192.3.2.1	Station 3	CNX3
100%	192.4.2.2	Station4	BNX4
100%	192.5.2.2	Station 5	RNX5
100%	192.8.2.2	Station 8	Maple Ridge Firehall 1
100%	192.9.2.5	Station 9	Maple Ridge Firehall 3
100%	192.10.2.2	Station 10	Maple Ridge Firehall 2



**Integrity Results**

IP Address: 192.10.2.2           

Name: Station 10

Description: Maple Ridge Firehall 2

Round Trip Times (ms)

Low Deviation	Mean	High Deviation	Percent Success
108	628	148	100
Minimum	Current	Maximum	Time Out
270	1001	10000	1008

FIG. 11

**File Transfer**

New Transfer

Completion Status

FIG. 12

**Select Node**

IP Address	Name	Description
192.39.2.1	Node 39	Relay

FIG. 13

002790" T8546560

File Transfer

Local

Schedule

Start

Edit

Pause

Stop All

Mon, Nov 24, 10:47 AM

Start Time

0, 00:03:47

Time until Start

0

Port

0

Block Number

8

Retries

3000

Mean Response Time

3000

Response Time Out

Remote

Port

69

FIG.14

002790" T8545563

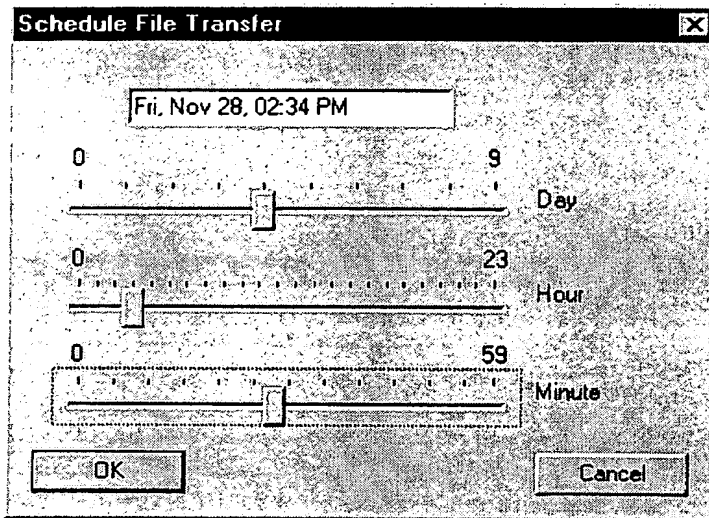


FIG. 15

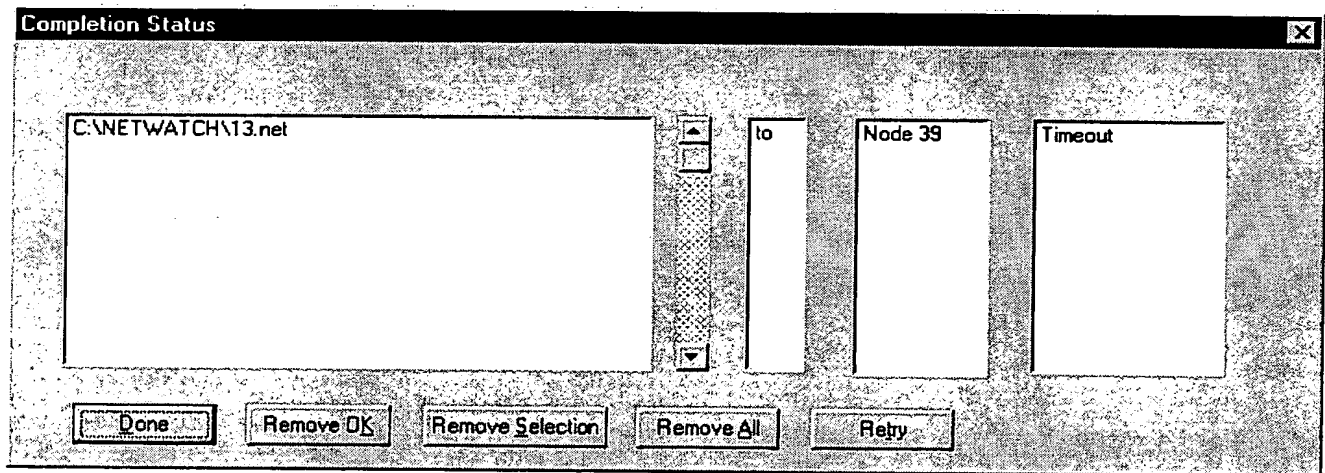


FIG. 16

## Link Process

Creation called from the  
system initialization  
program

Creation

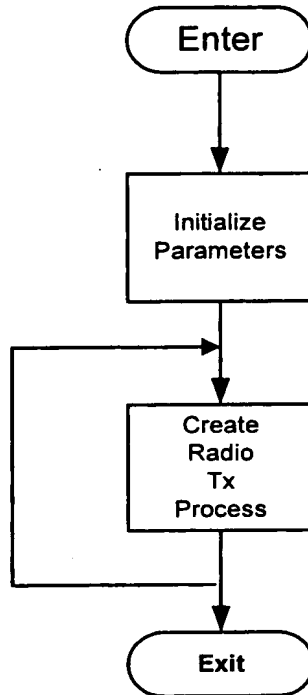


FIG. 17

## Point-to-Multipoint Processing

### Link Process

Initialization called from the  
system initialization program

Initialization

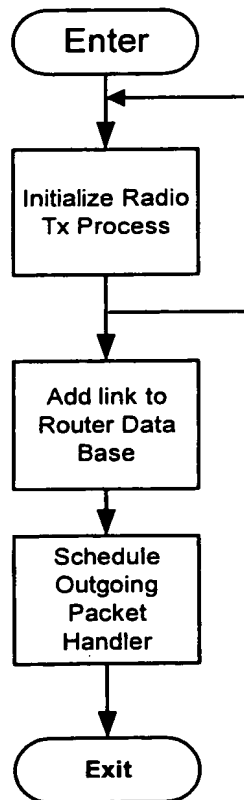


FIG. 18

# Point-to-Multipoint Processing Link Process

Invoked by the dispatcher  
on packet arrival or 1  
second timeout

Outgoing packet Handler

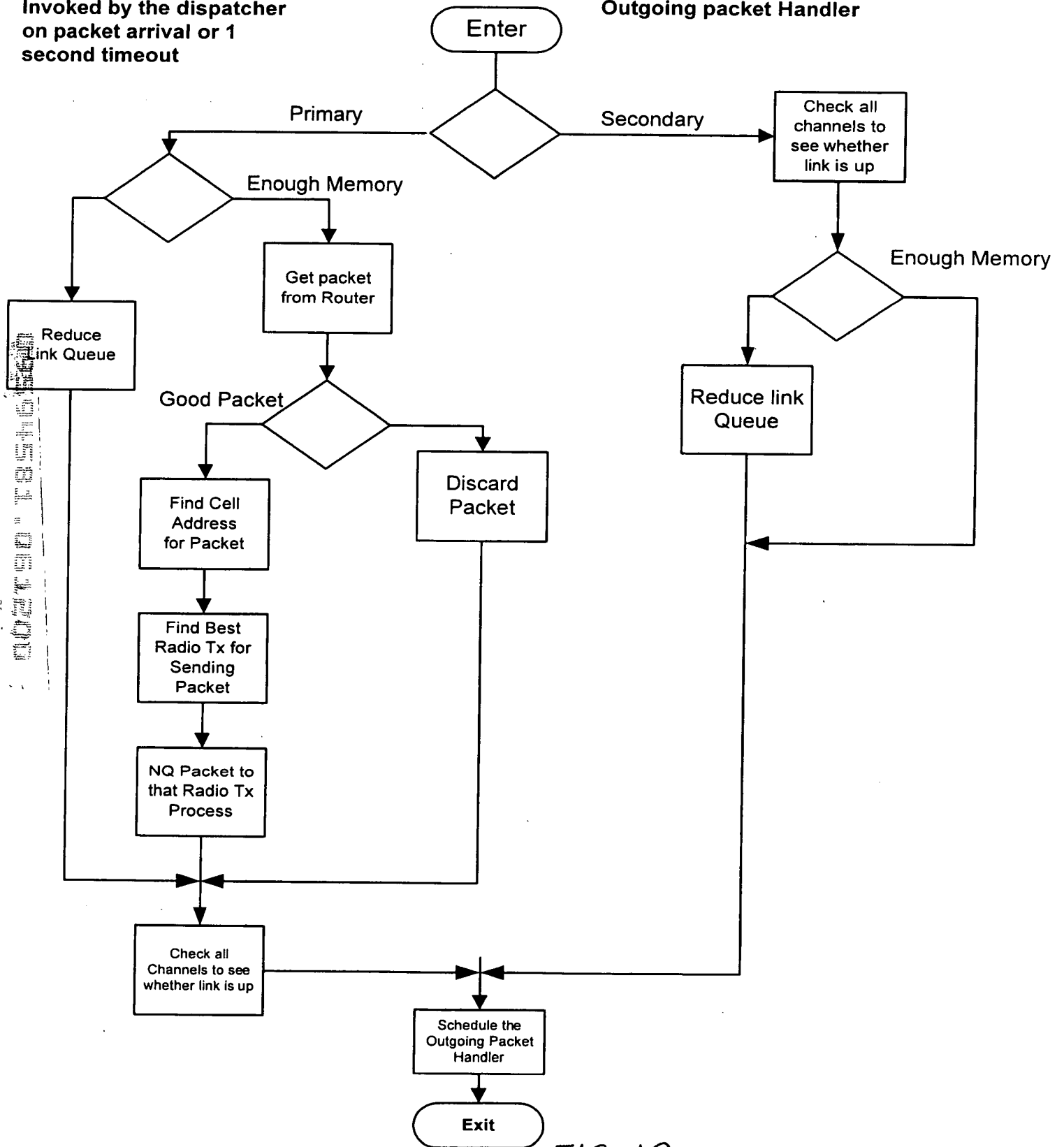


FIG. 19

# Point-to-Multipoint Processing

## Radio Tx process

Called from link process  
initialization

Initialization

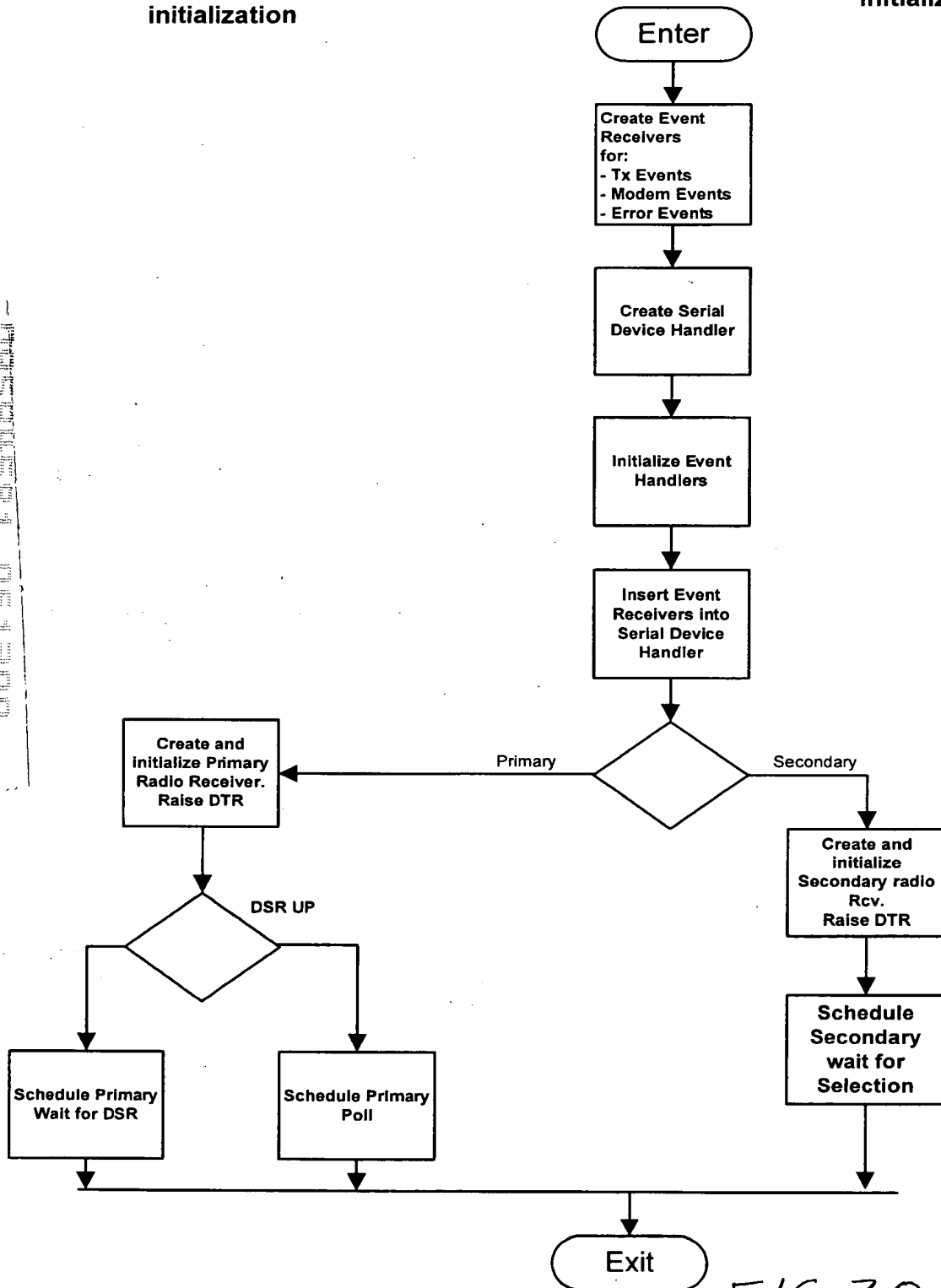


FIG. 20

# Point-to-Multipoint Processing

## Radio Tx process

Radio Tx Process Called  
from Link Process  
Creation

Creation

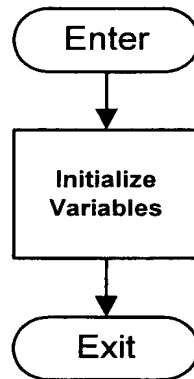


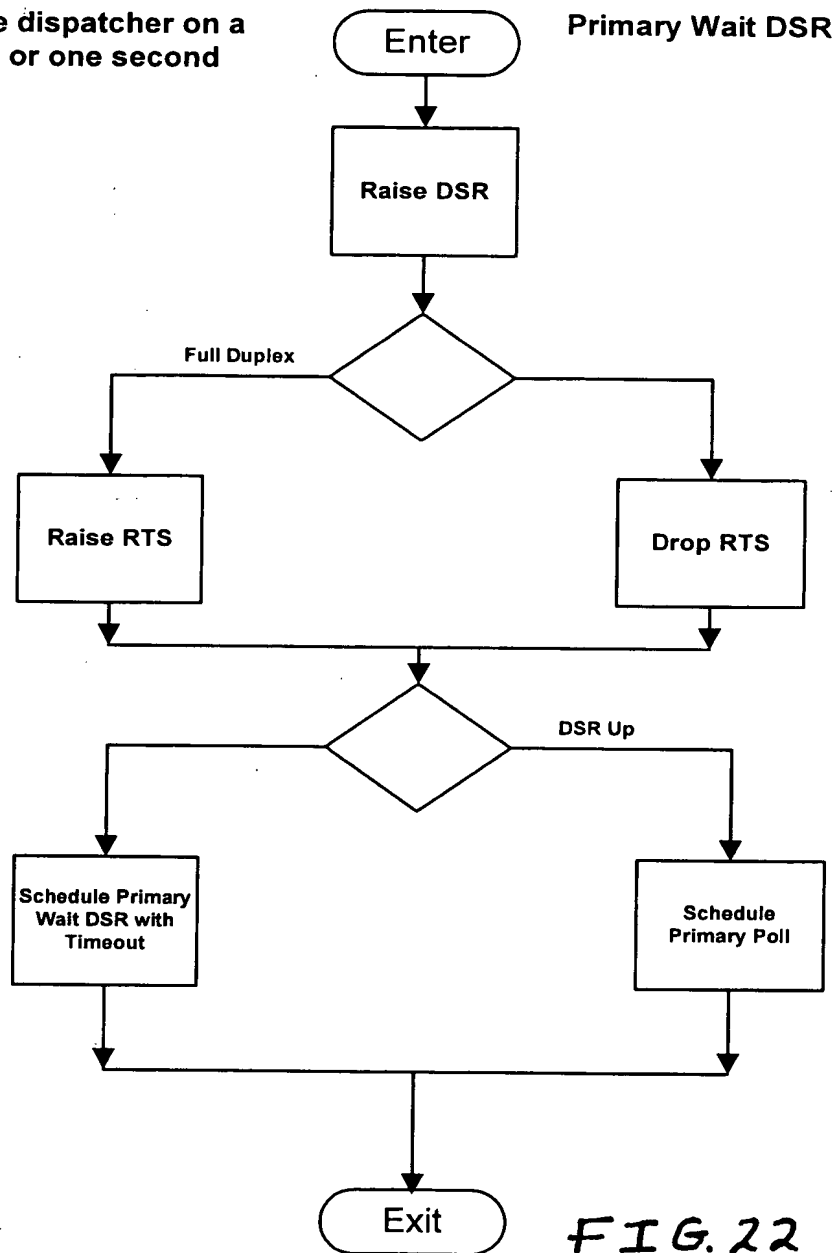
FIG. 21

002790" TEST660

# Point-to-Multipoint Processing

## Radio Tx Processing

Invoked by the dispatcher on a modem signal or one second timeout





# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher on receipt of a packet

Primary Poll

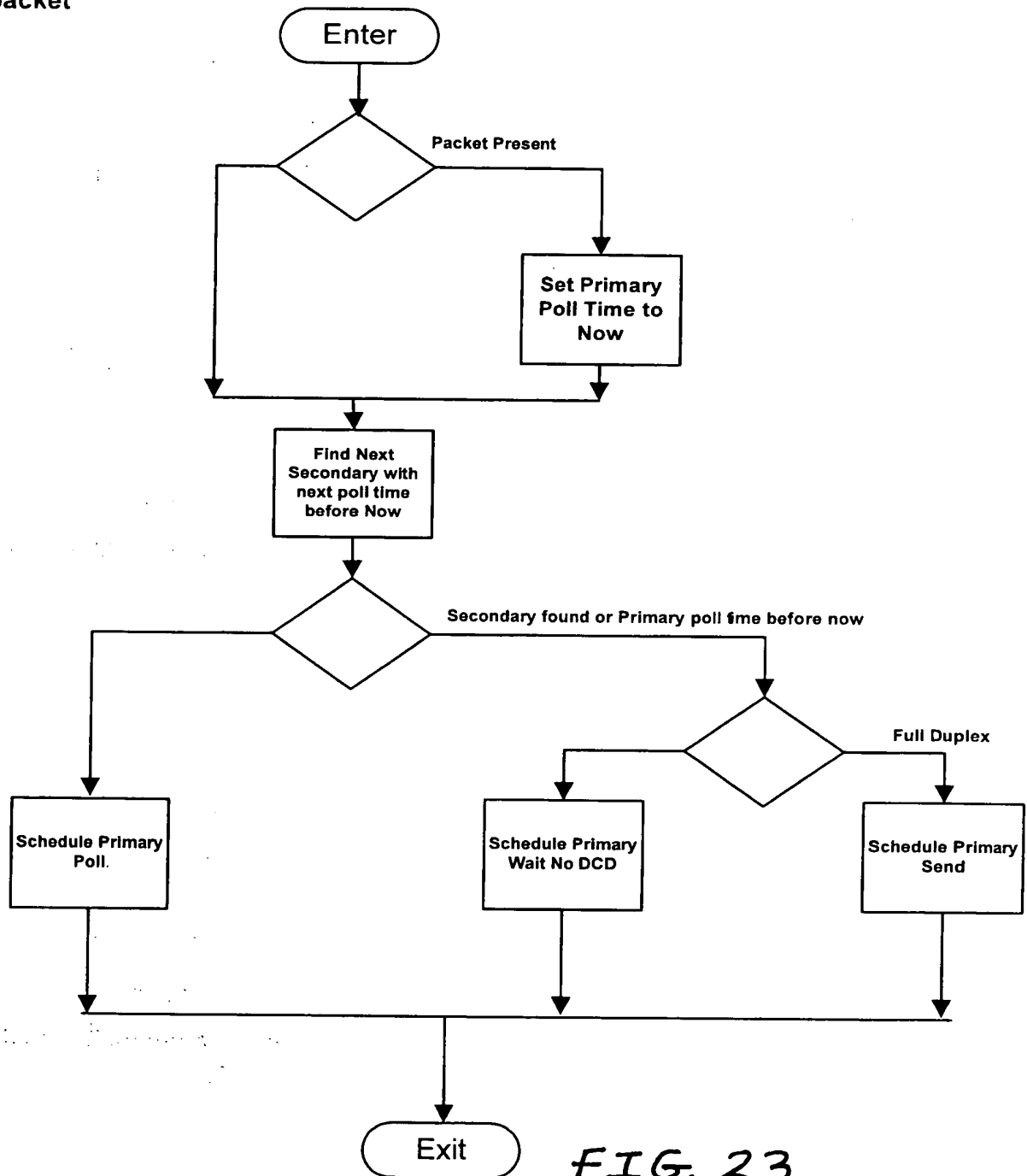


FIG. 23

# Point-to-Multipoint Processing Radio Tx Process

Invoked by the dispatcher

Primary Wait No DCD

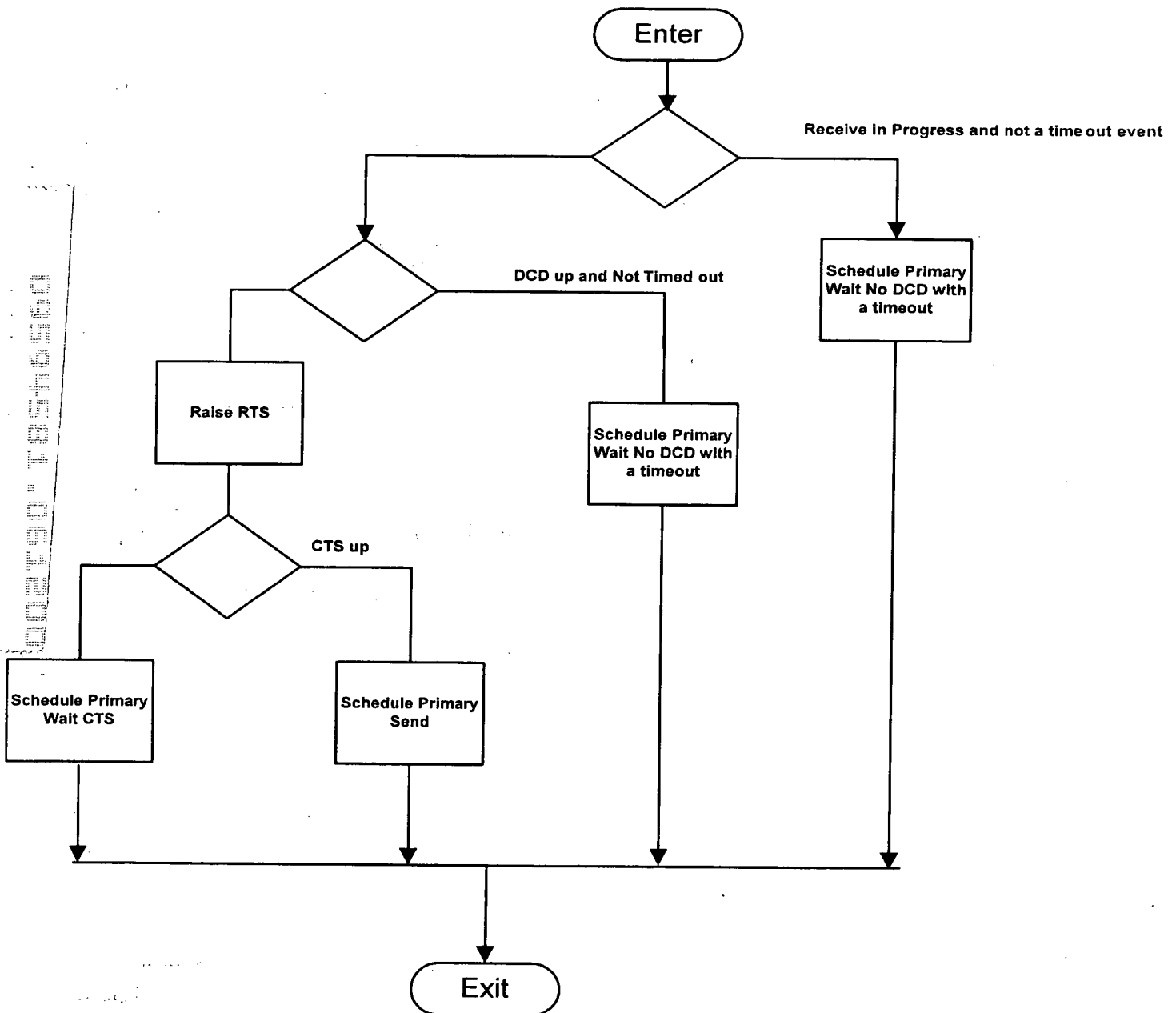


FIG. 24

# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher

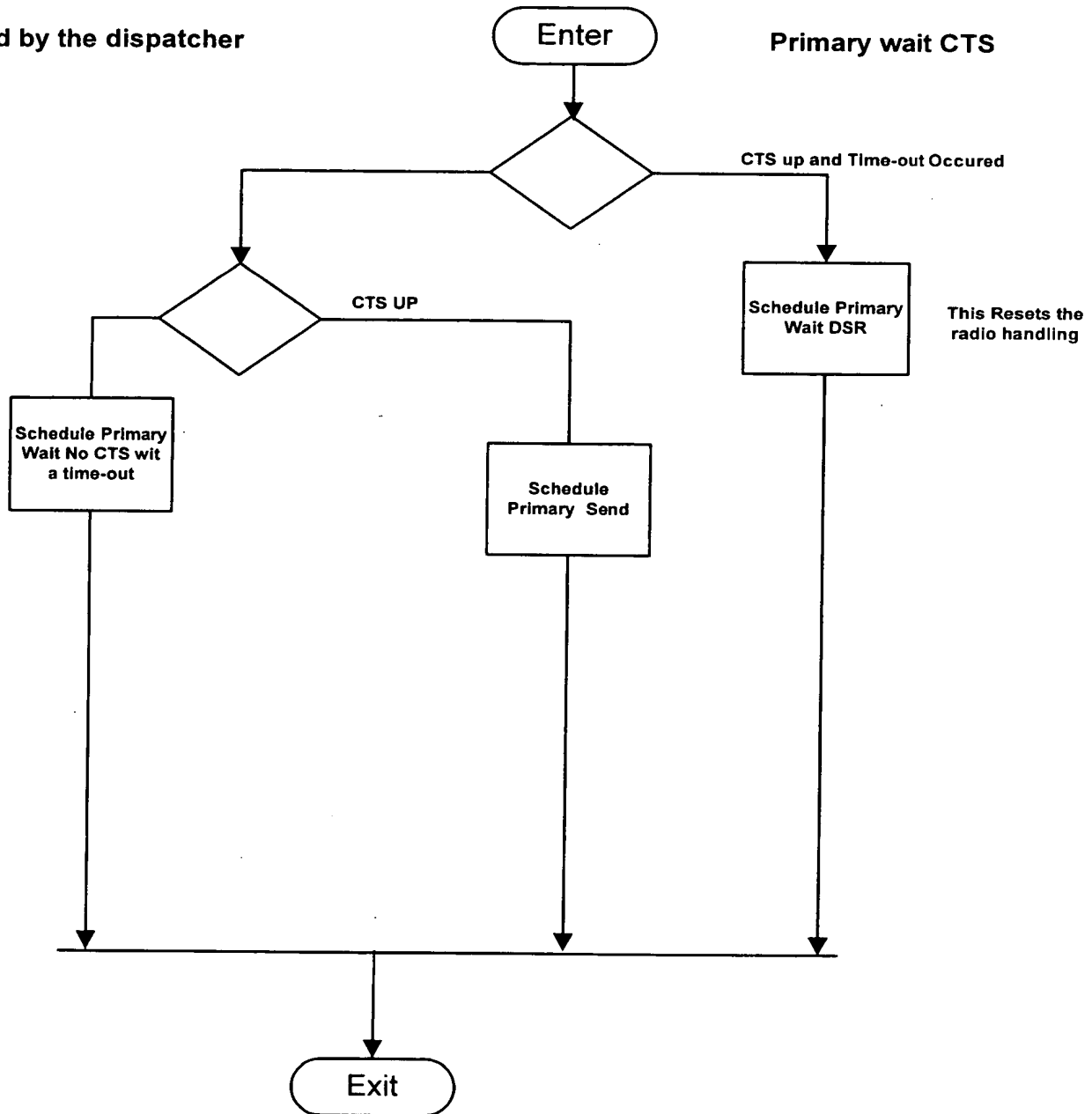


FIG. 25

09594581.061200

# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher

Primary Send

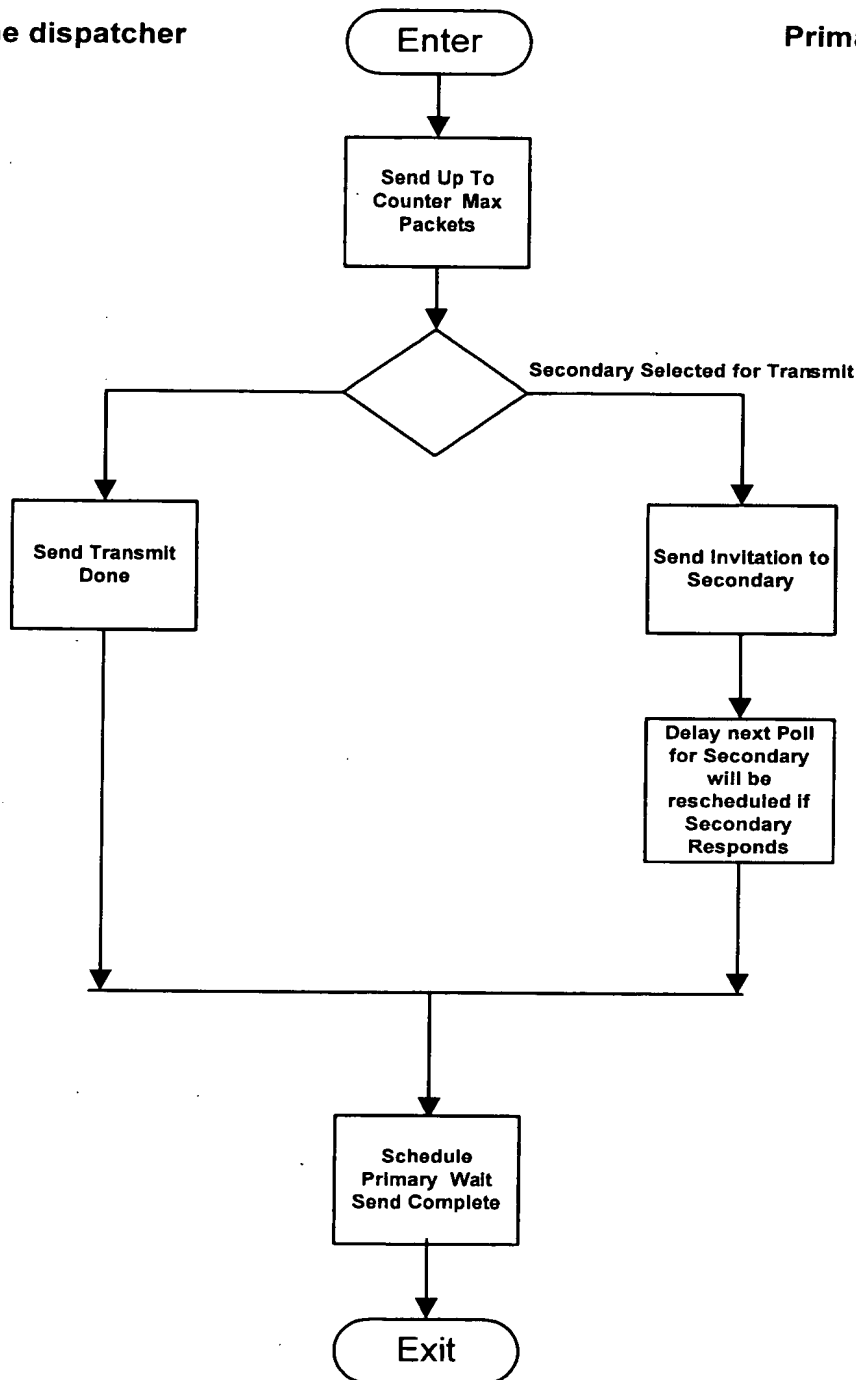


FIG. 26

09594581.061200

## Radio Tx Process.

### Primary Wait Send Complete



FIG. 27

# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher

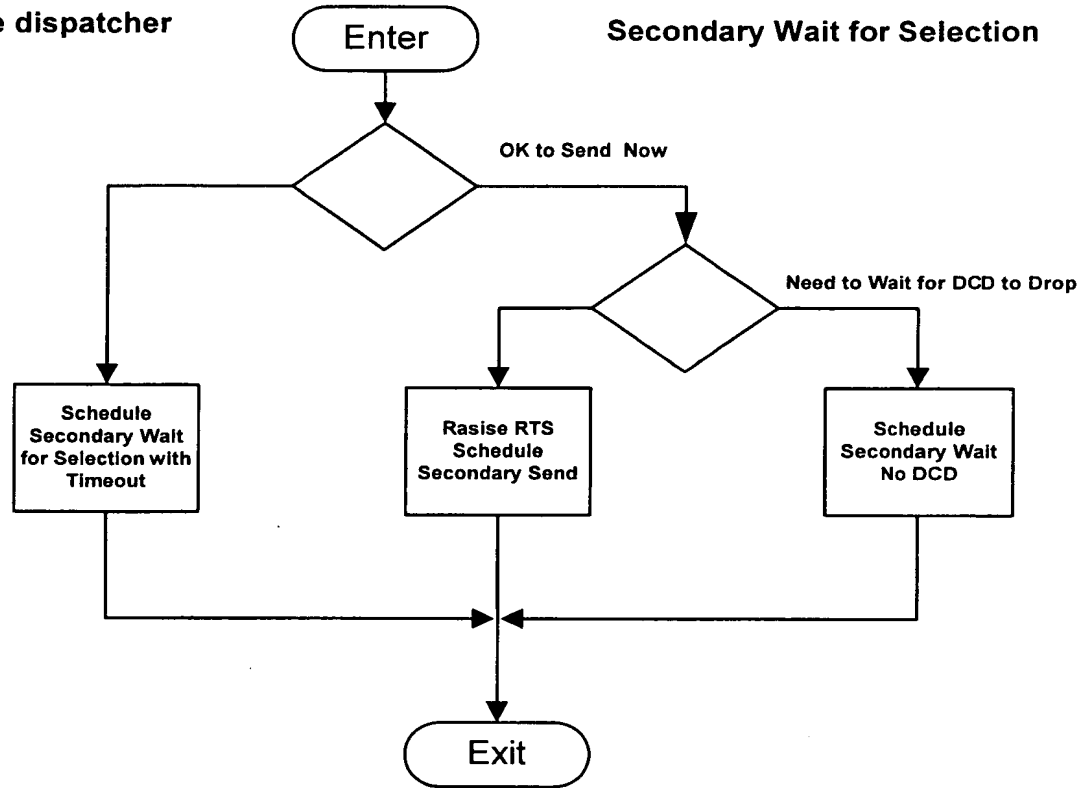


FIG. 28

002150 18546560

# Point-to-Multipoint Processing Radio Tx Process

Invoked by the dispatcher

Secondary Wait No DCD

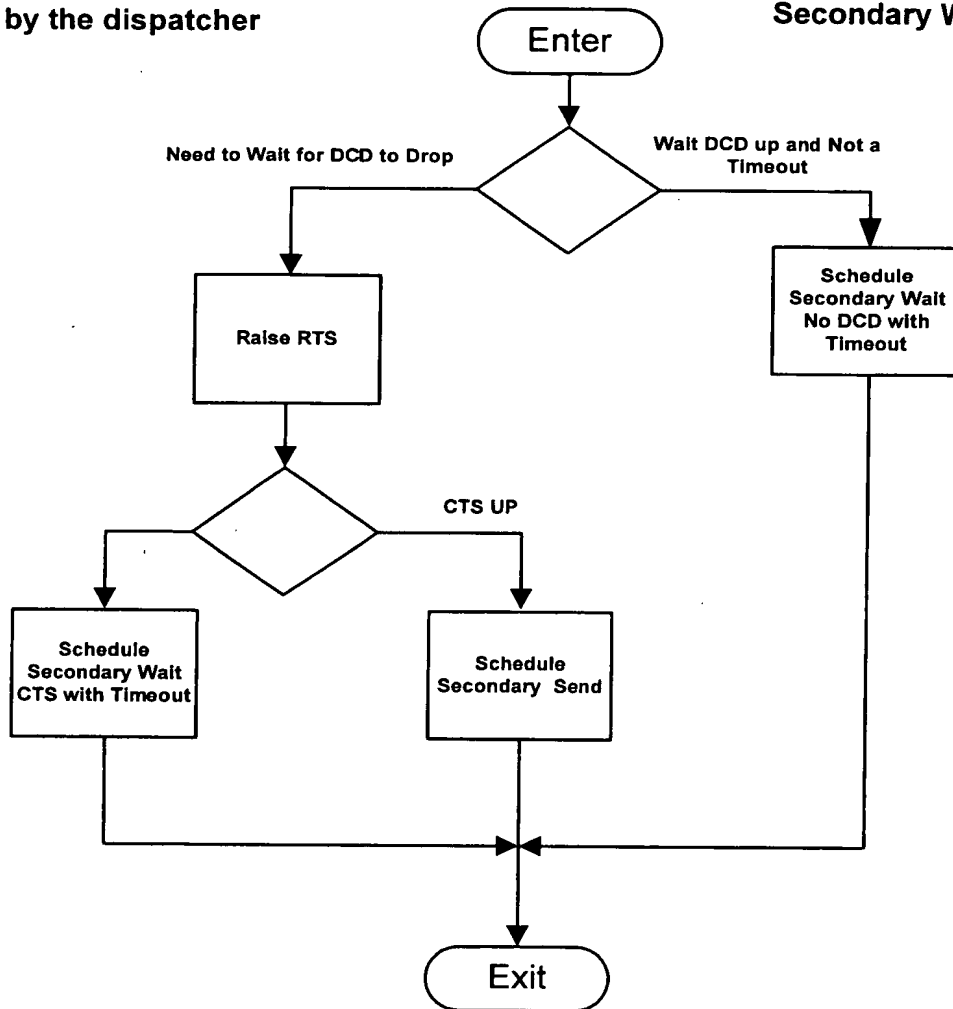


FIG. 29

# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher

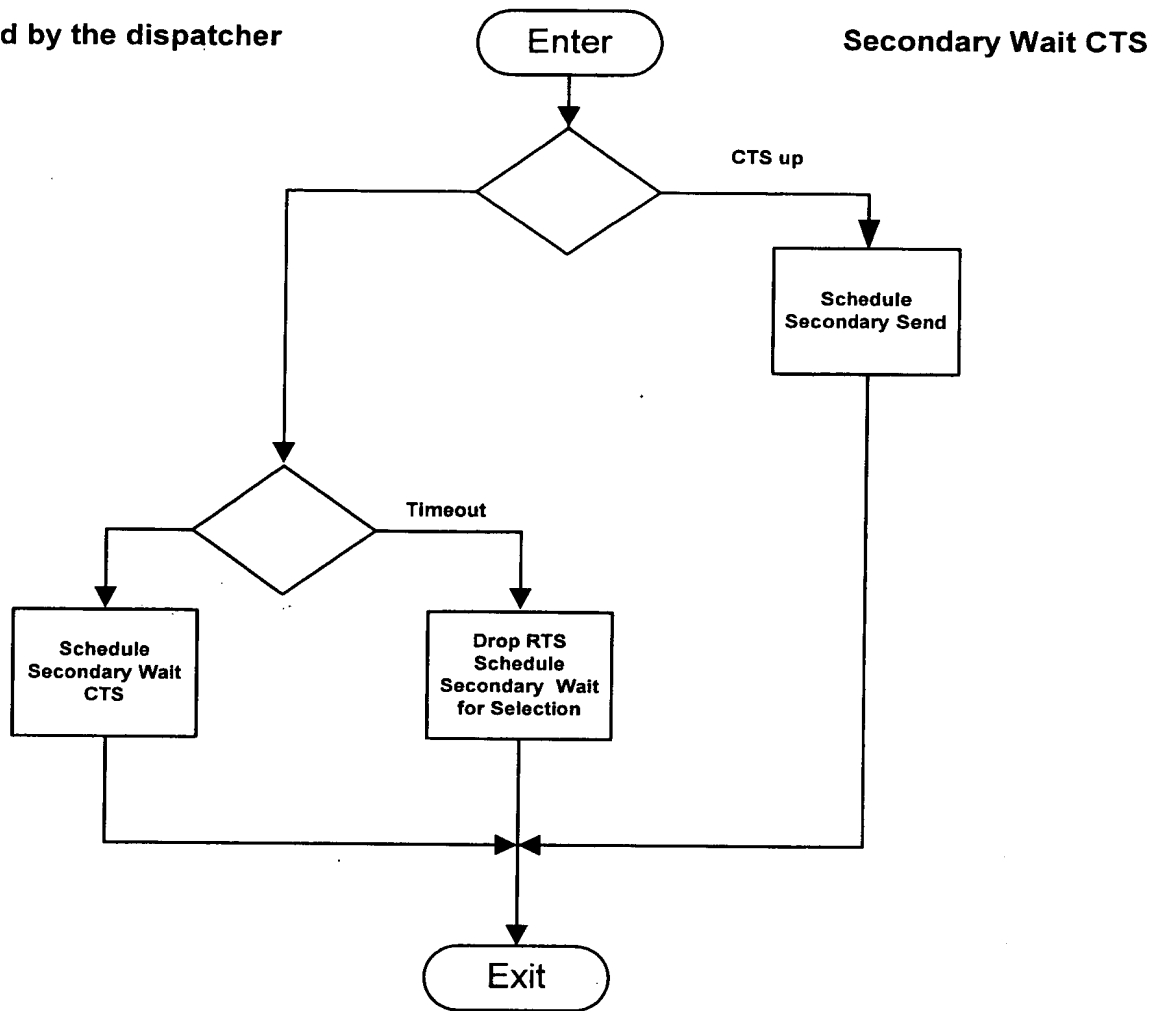


FIG. 30



# Point-to-Multipoint Processing Radio Tx Process

Invoked by the dispatcher

Secondary Send

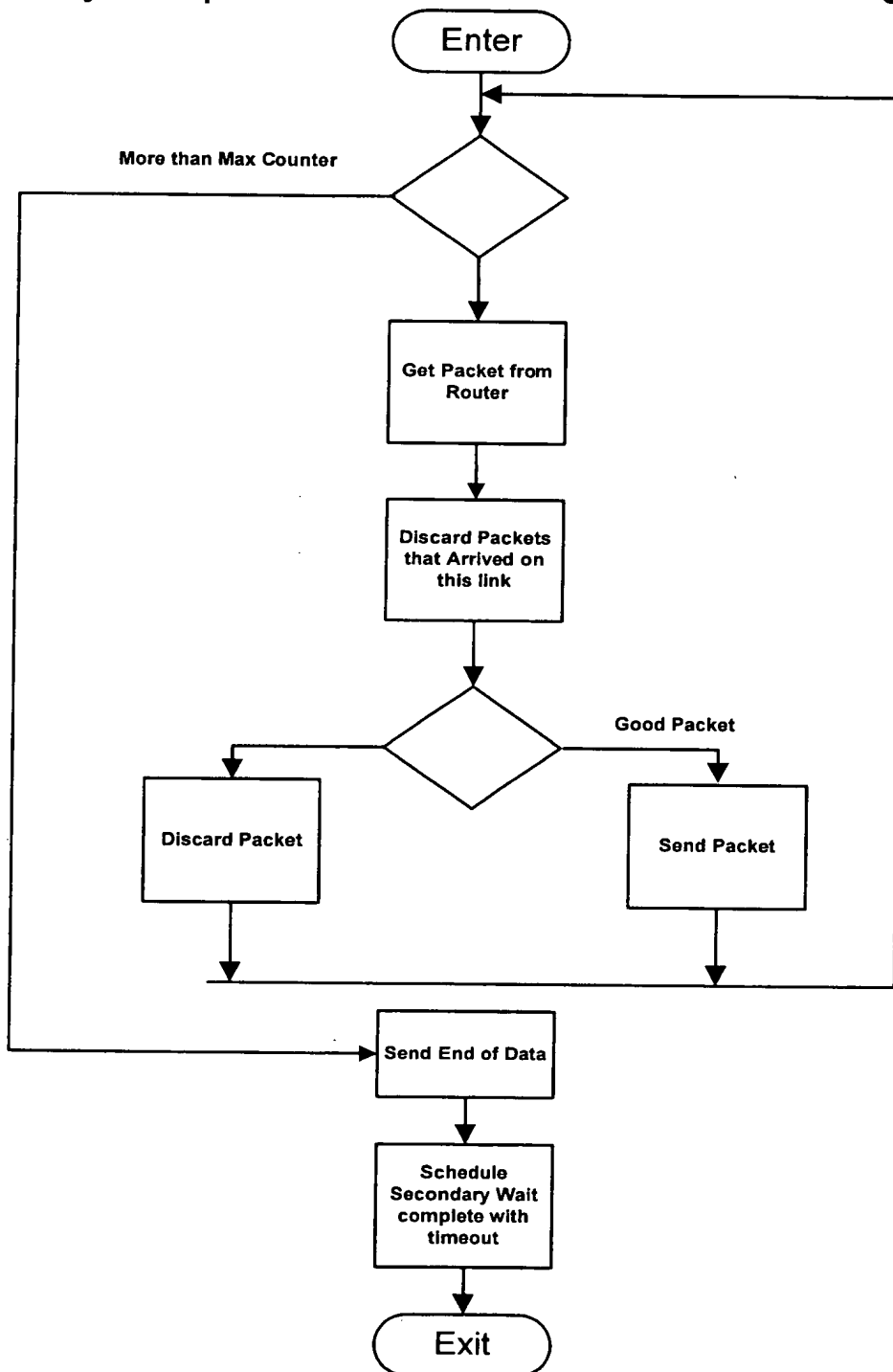


FIG. 31

# Point-to-Multipoint Processing

## Radio Tx Process

Invoked by the dispatcher

Secondary Send

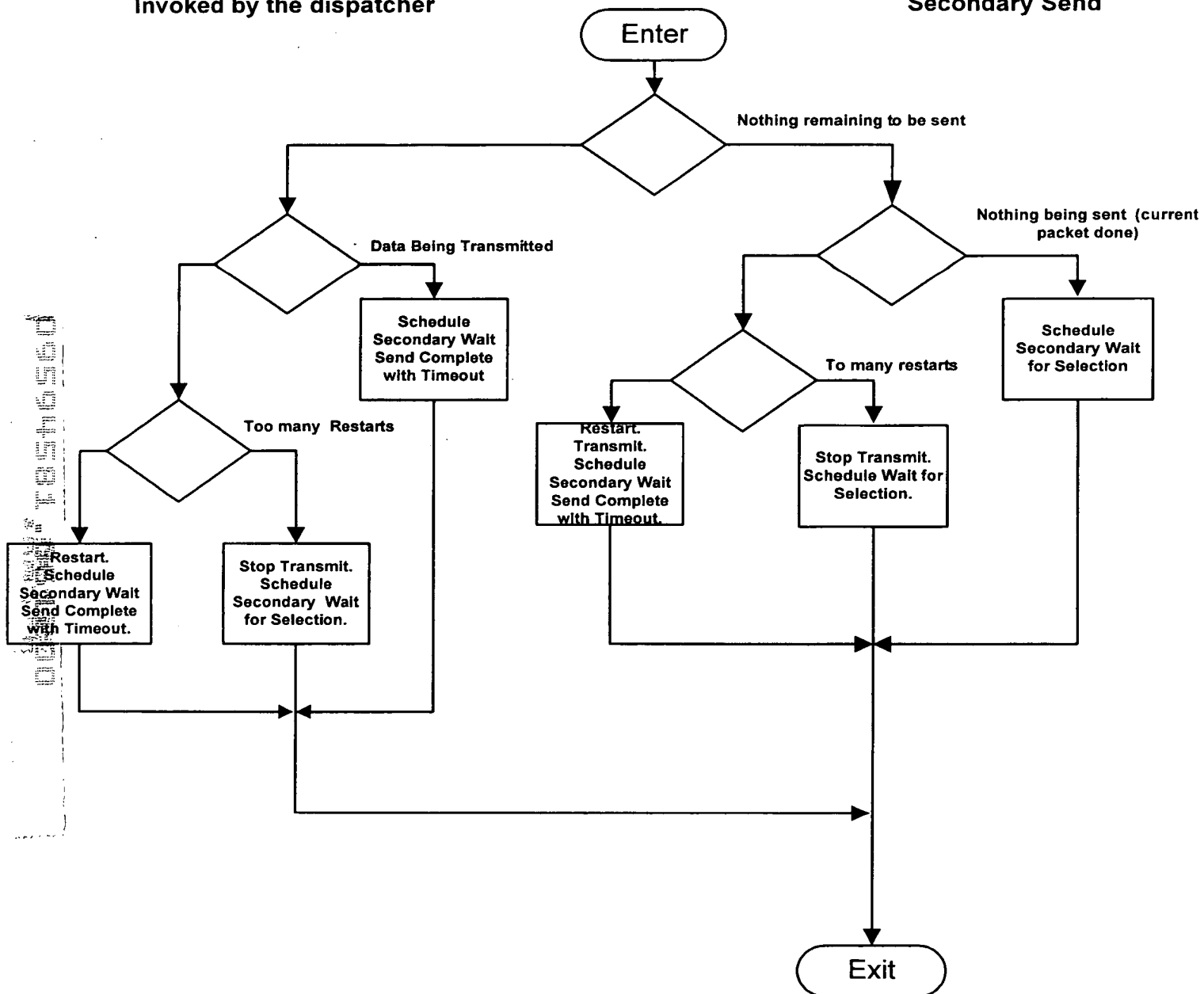
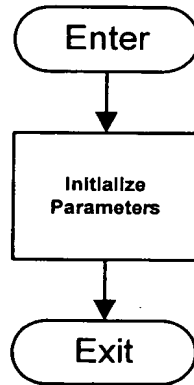


FIG. 32

# Point-to-Multipoint Processing

## Primary Receiver Process

Called by Radio Tx Creation



Create

FIG. 33

Called by Radio Tx Initialization



Initialization

FIG. 34

# Point-to-Multipoint Processing

## Primary Receive Process

Invoked by the dispatcher

Primary wait CTS

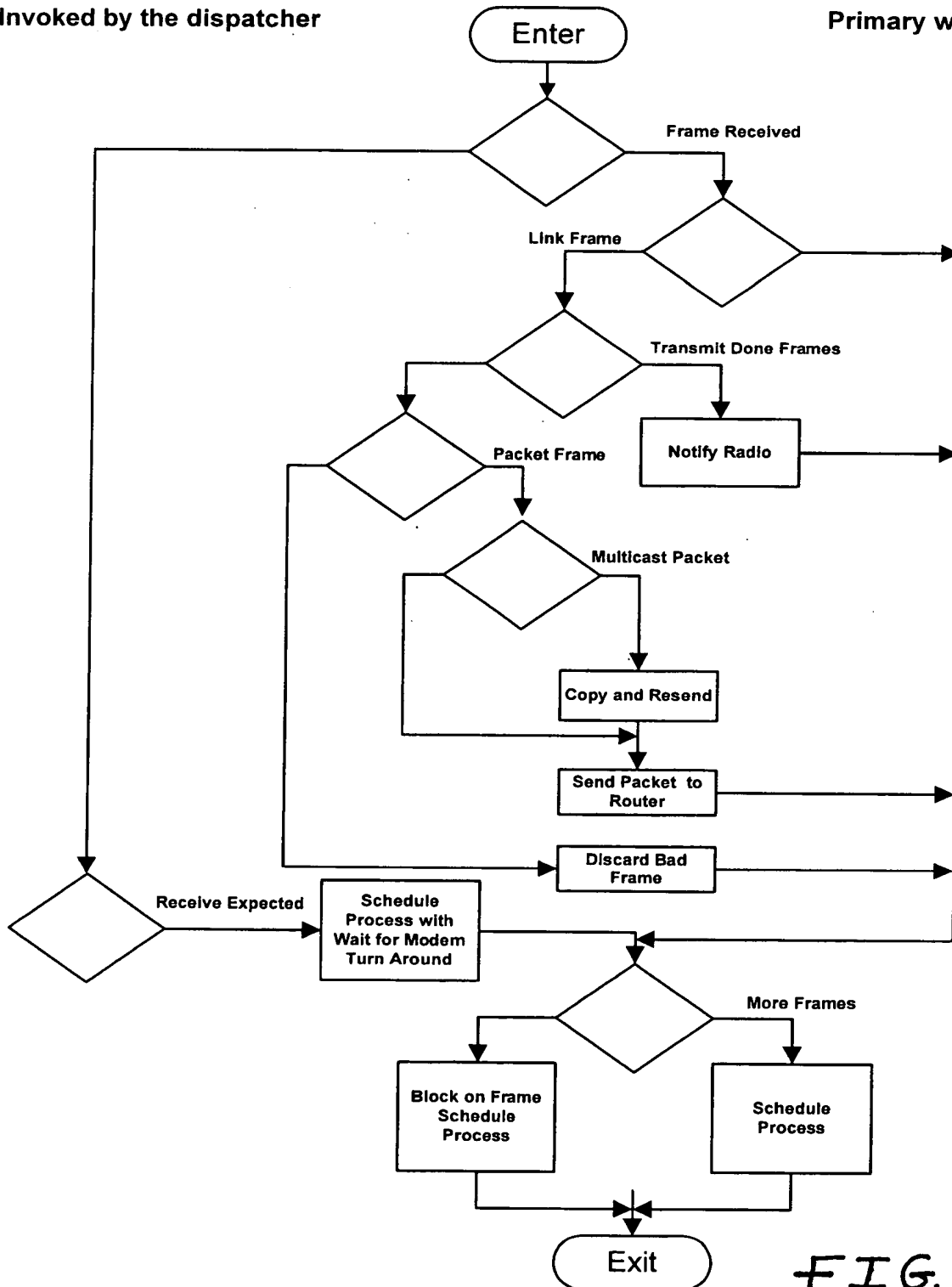


FIG. 35

# Point-to-Multipoint Processing

## Secondary Receive Process

Called by Radio Tx

Create

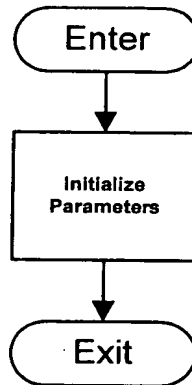


FIG. 36

Called by Radio Tx Initialization

Initialization

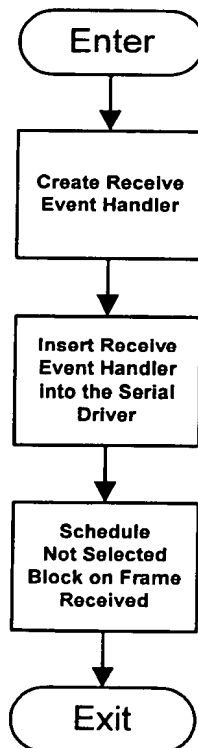


FIG. 37

## Secondary Receive Process

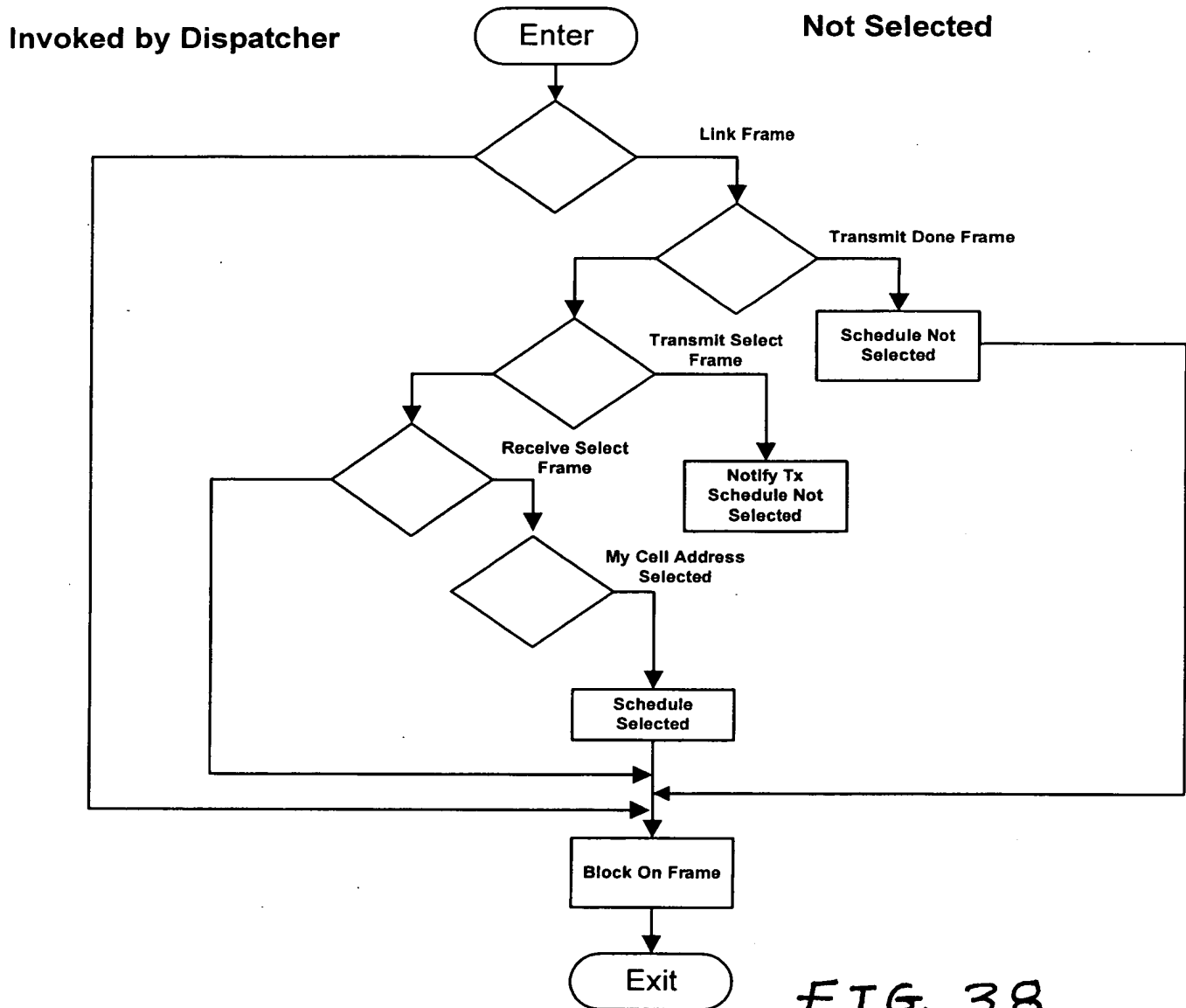


FIG. 38

# Point-to-Multipoint Processing

Invoked by Dispatcher

Secondary Receive Process

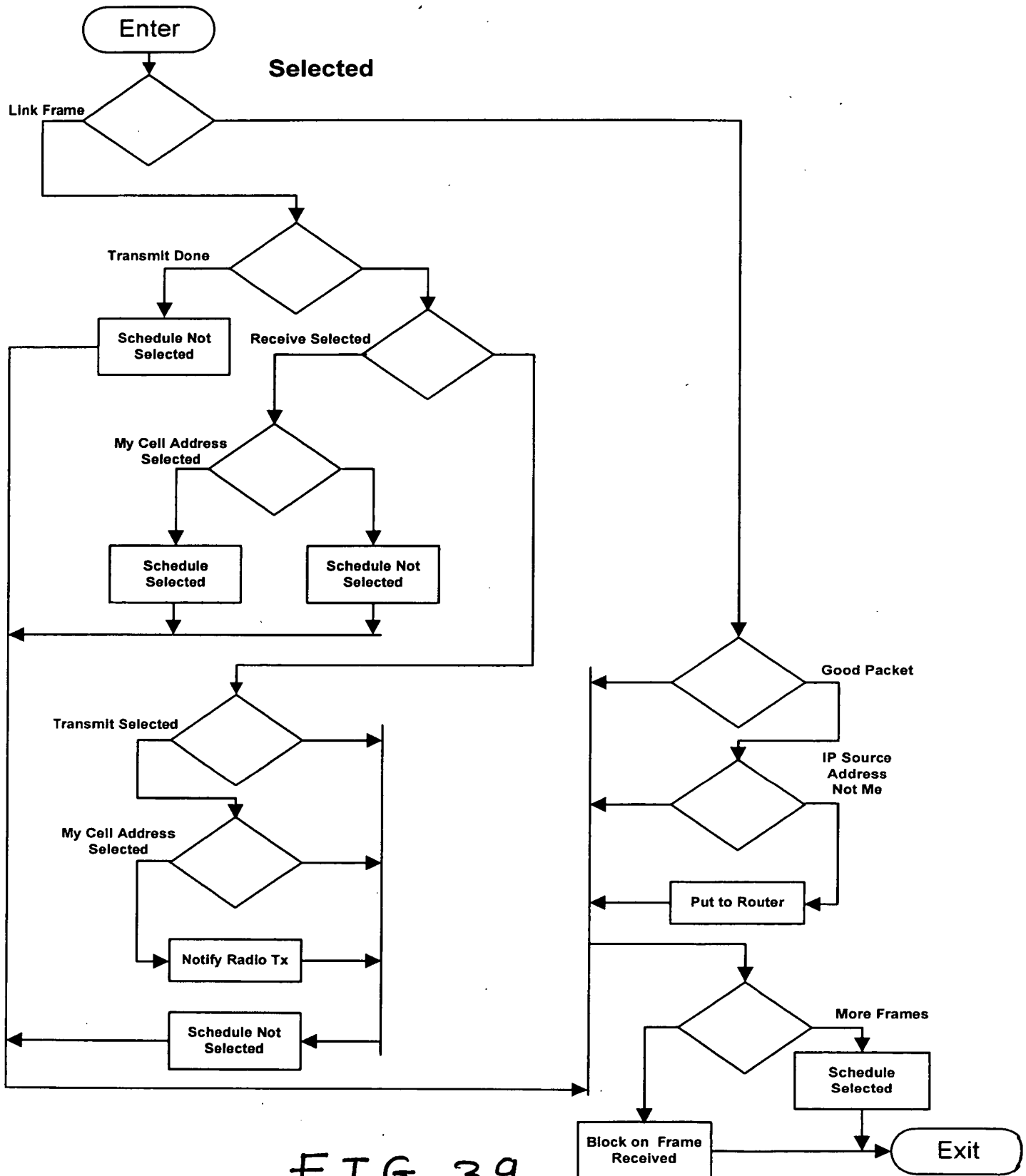
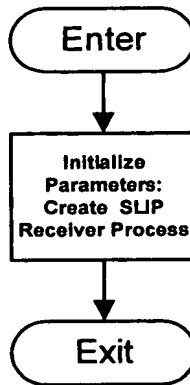


FIG. 39

# SLIP PROCESSING

## SLIP Link Process

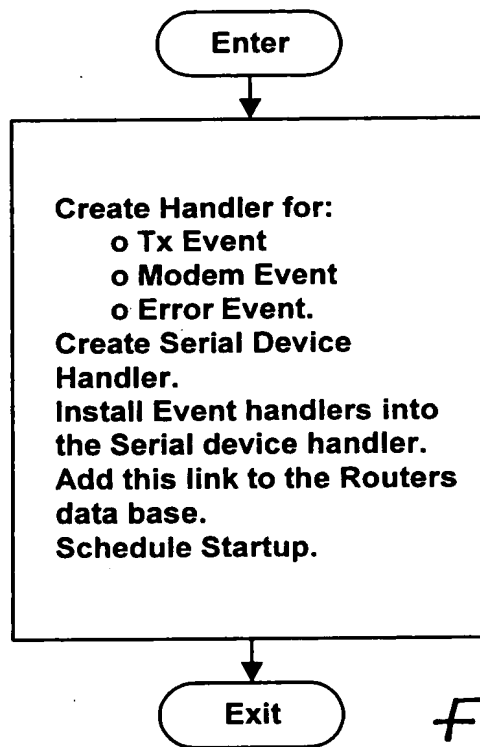
Called from system  
Initialization



Create

FIG. 40

Called from system  
Initialization



Initialization

FIG. 41

09594581 061200



# SLIP Processing

SLIP Link Process

Invoked by Dispatcher

Start Up

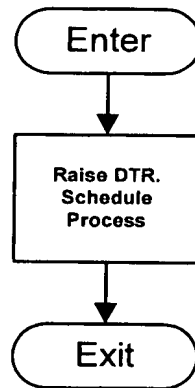


FIG. 42

00250" 0346560

# SLIP Processing

SLIP Link Process

Invoked by Dispatcher

Process

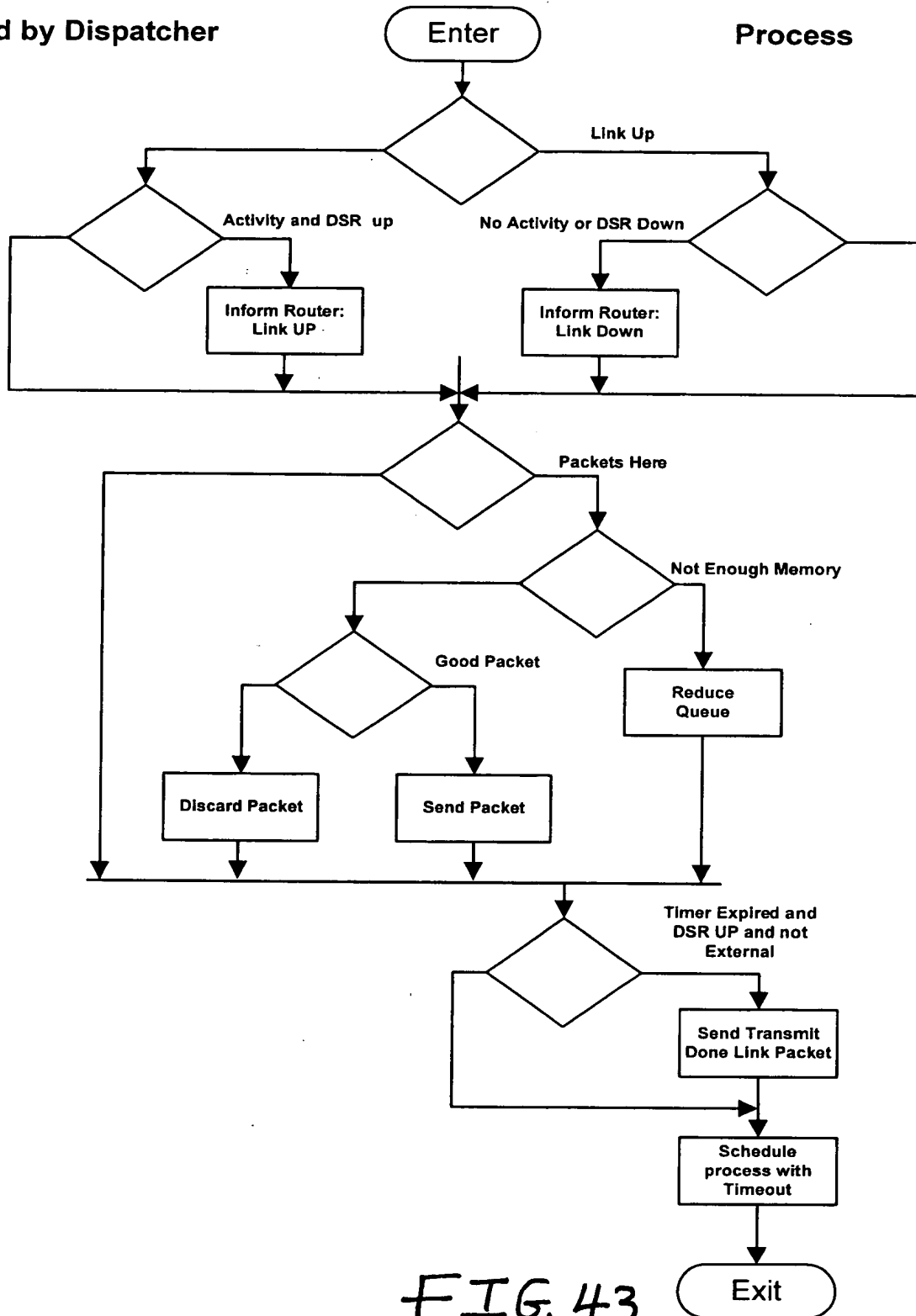


FIG. 43

# SLIP Processing

SLIP Receiver Process

Called by SLIP Link Process

Create

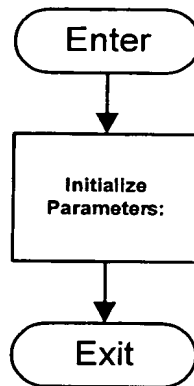


FIG. 44

# SLIP Processing

SLIP Receiver Process

Called by SLIP Link Process

Initialization

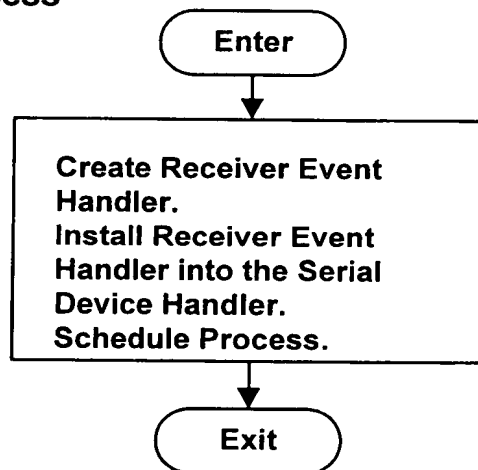


FIG. 45

00190 T8546560

# SLIP Processing

SLIP Receiver Process

Invoked by Dispatcher

Process

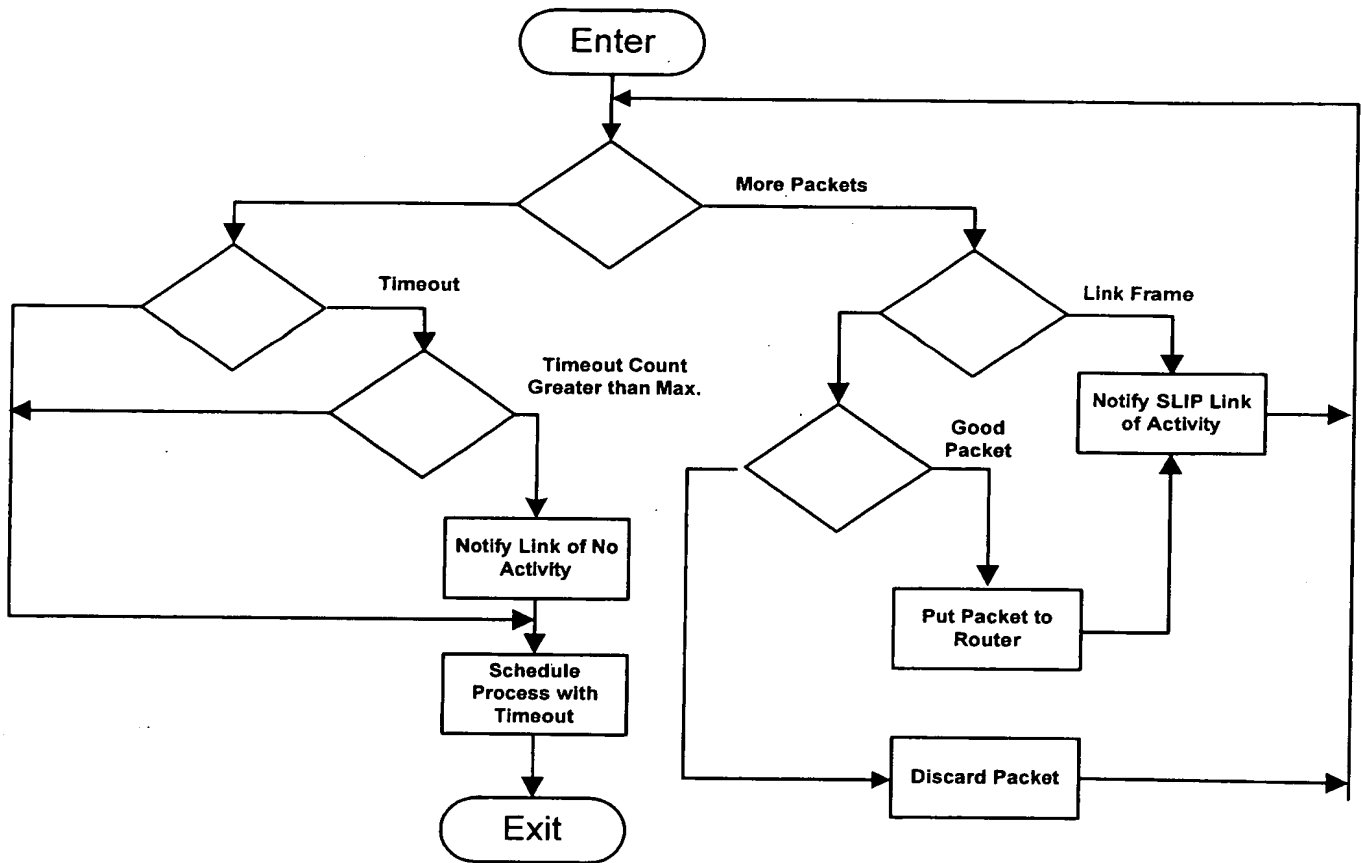


FIG. 46

002790 18546960